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open to discussion. The others, namely the grey and green slates which I have described, are included by Mr. Studer in the general name of *Flysch*, a widely spread formation in Switzerland, but where superposition is too irregular and uncertain, and the series of formations too imperfect to afford any clue to its age, whilst the one or two fossils which have been found in it seem to point to an age newer than the lias, and older than the medium chalk formation. What an overturn of all ancient ideas in geology, to find a pinnacle of 15,000 feet high, sharp as a pyramid, and with perpendicular precipices of thousands of feet on every hand, to be a representative of the older chalk formation! and what a difficulty to conceive the nature of a convulsion (even with unlimited power) which could produce a configuration like the Mont Cervin rising from the glacier of Zmutt."

It is to be hoped that, the ground having been fairly broken for an improved geography of the Alps, that region will not much longer be allowed to remain a reproach to modern geographical knowledge. It would have been pleasing to anticipate that the author of the work we have been reviewing might have been able to carry on the researches he has so admirably begun, but of this it is with deep regret we learn there is no immediate prospect. He is at present in such a delicate state of health—owing in great part, there is reason to apprehend, to his exertions and exposure in the inclement regions of the Alps—as to have been obliged to seek a milder climate than his native island affords, and to intermit the discharge of his professional duties during the present winter. May the change prove beneficial! and be the means of restoring to his favourite pursuits one who, with ardent zeal in the pursuit of knowledge, combines high qualities for attaining it and a rare degree of amiability, purity, and elevation of character.

II.—*Researches in Asia Minor, Pontus, and Armenia; with some account of their Antiquities and Geology.* By WILLIAM J. HAMILTON, Secretary to the Geological Society. London. Murray, 1842. [By the Editor.]

AMONG the geographical works entitled by their intrinsic merit to analysis, now lying on our table, Mr. Hamilton's appears to be classed most naturally with the other two selected for notice in the present Part of the Journal. Taken together, the whole three give evidence of a promising spirit of enterprise among the geographers of Great Britain, combined in two of the instances, in a rare degree, with judicious pains-taking. The circumstances attendant on the publication of Mr. Johnston's Atlas indicate an awakening interest in geographical research in a seat of scientific inquiry where it has been hitherto comparatively neglected. The work of Professor Forbes—also emanating from the scientific circle of Edinburgh—is an example of a mind at once highly gifted and perseveringly industrious, devoting itself to show how much may be done to elucidate truth by observation in what are too commonly deemed hackneyed and exhausted spheres. Perhaps, there can be no better indication of a high caste intellect than this faculty of seeing in all the freshness of first impressions those objects to which more common-place minds are blunted by familiarity. Mr. Hamilton, on the other hand, carries accomplishments and natural abilities quite on a par with those of Professor Forbes into distant regions, and pursues his observations with equally unremitting accuracy. It is only thus that geography, or any branch of knowledge, can be promoted. The poet may work alone—not with the same success as when he catches suggestions and emulative energy from rivals in the same path,—but his materials are within his own breast; a poem is the work of an individual mind. The scientific inquirer, on the contrary, can only work in combination with many. The collective store of the observations of many individuals in many generations,—the forcing of opinion into the medium path of truth by the antagonism of minds liable to errors of an opposite kind,—are required to form a science. With geography in particular this holds good. The adventurer in remote regions,—the less ambitious traveller who can find novelty in the beaten track,—the closet speculator, —all their peculiar talents and exertions must be combined to make geography what it ought to be. And it is of good augury for its progress in our own country at the present time that we find widely different talents and tastes industriously promoting it under the guidance of sound judgment.

With regard to Mr. Hamilton's ‘Researches’ we feel inclined to repeat a sentiment similar to that already expressed with regard to the work of Professor Forbes, that we almost value them less for the additions they make to our positive knowledge, than as a model of the manner in which travellers ought to conduct their observations. It has always appeared to us a noble idea of Milton, in his ‘Tractate on Education,’ when he proposes that the young men of that class whose especial task he considered government to be, should, at a certain age, be sent to travel, obliged at their return to report the results of their observations to the Council of State, and employed and promoted in proportion as they appeared to have turned the opportunities and experience of their travel to good account. In modern times the press has become a very efficient substitute for the arrangement proposed by Milton, and has enabled our young travellers ambitious of a useful and distinguished career, to prove their capacity for public service, thus benefiting at the same time science and themselves. Whoever has materials for a book may make a book, and he who has a more scanty store may find work for it in the scientific journals. To travel, and to publish, in some form or other, the results of travel, has become a taste and almost a habit in the present age. The result is, to borrow an illustration from Shakspere, among much chaff some grains of wheat. And it is with a view to elicit the greatest possible benefit from such a fashion (the word is used in no fastidious sense), that we would recommend to all who may aspire to tread in the footsteps of Mr. Hamilton, to emulate also his careful preparation, and the unrelaxing activity with which he kept the objects of his travel before him throughout.

"In the early part of 1835," says Mr. Hamilton in his preface, "I was induced to direct my attention to some of the Turkish provinces in Asia, which could not fail to present discoveries interesting to the antiquary, the geographer, and the geologist. I accordingly arranged a plan which, at the same time, promised to gratify my love of travel and to rekindle those classic associations which are connected with our early habits. The following three or four months were passed in preparing for the task, in examining the ancient writers, and in acquiring the use of the sextant and circle. * * * * *

"My attention was directed chiefly to the comparative geography of the country, the examination of ancient ruins, and the fixing of positions by astronomical observations. The geology of the country also claimed a large portion of my time; and, considering the difficulty of transport I had to encounter, I may deem myself fortunate in having made a large collection of rocks and minerals. I soon found that the maps of the country were incorrect in the highest degree; in fact absolutely useless. I therefore spared neither time nor labour in making a careful annotation of time, distance, and directions, by which means, together with astronomical observations for latitude, I hoped to be able to construct a more correct map of those parts of the peninsula through which I passed. With this object in view, and independently of a very detailed journal, I succeeded in keeping, with a very few exceptions, a minute itinerary of every mile of road, noting the exact time of departure, and with my compass constantly in hand, the direction of the road, as well as every change, sometimes to the number of twenty or twenty-five in an hour; adding remarks suggested by the physical structure of the country. A specimen of this itinerary, representing one day's work, will be found in the Appendix.

"In order to construct a map, after my return to England, the whole of the route, extending over several thousand miles of road, was laid down on the scale of one inch to a mile; in this task I received much assistance from Captain G. H. Hamilton. The neighbouring country was then marked in from my geographical notes and cross-bearings; after which it was corrected for the observations of latitude (worked out by the same officer), and then reduced by him to the scale of five miles to an inch. In this state it was put into the hands of Mr. John Arrowsmith, whom I cannot sufficiently thank for the manner in which he has executed his part of the labour. I may add, that in those parts of the country through which I passed all the positions have been laid down from my own observations, with the exception of the lines of coast which have been taken from the naval surveys, and a portion of that of the Euxine from Mr. Ainsworth's map. In other parts of the country I have introduced the routes of Messrs. Ainsworth, Fellows, Brant, and others, whose observations seemed entitled to credit; amongst which Colonel Chesney's delineation of the country round the Gulf of Scandaroon and the Syrian passes, together with the neighbouring mountains, is one of the most important. For the western shores of Asia Minor I am indebted to Captain Beaufort, who has kindly placed at my disposal the excellent charts constructed by the officers employed on the surveys carried on by Captains Copeland and Graves."

This, we repeat, is the spirit in which a traveller who would render his labours useful to others and to himself must set to work and carry out his enterprise. The three or four months of preparation to which Mr. Hamilton alludes may appear inadequate, and so it would be to those who did not bring to the task talents developed like his by an excellent education and habitual interest in literary and scientific pursuits. What Mr. Hamilton calls preparation was properly reviving knowledge and faculties previously acquired, but allowed in the hurry of other avocations to rust a little. We may add that it is comparatively easy to sketch out such a plan of travel as his before-hand, and even to speak of it complacently afterwards as having been carried into effect. But the specimen of the itinerary referred to in the above quotation is a curious piece of evidence to the unflagging spirit with which our traveller's resolutions were acted upon throughout a protracted journey of seventeen months. It is the power evidenced by this document of sustaining day after day the monotonous detailed labour of a self-imposed task that enables men to accomplish anything of value. Mr. Hamilton has given only one day's work as a specimen, and a small part even of that will serve our purpose. It is to be wished, however, that the itinerary itself may have been preserved, and that it should be deposited for reference in the archives of the Royal Geographical Society.*

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* Other MSS. of the same kind, which would only prove tedious to the mass of readers, and which consequently never can be published, might be deposited for the like purpose with great advantage to geographical science. For example, the portions of Bruce's note-books published by his biographer, Dr. Murray, have been of great use in correcting the lapses of that great sample of the *perfervidum ingenium Scottorum*, into which he allowed himself to fall by his intractable pride and irritable disposition. But much remains unpublished that might be studied with advantage by geographers. Were they entrusted for reference to some such public depôt as the archives of the Society, they would be always available.

		Thursday, May 25th, 1837.
H. M.		
7 20	S.S.E.	Start through Moudaniah.
25	S.W.	Ascending through Turkish town.
26	W.	
28	W.S.W.	Clear of town.
31	S.S.W.	Ascending ridge, ground slopes *r* and *l*: olives and vines.
33		Winding up steep road.
36	S.W.	Ascending ridge; ground slopes *l*.
40	W. by S.	Halt two minutes; ground slopes to sea, one mile off.
47	S.W.	
50	W.S.W.	Halt two minutes.
58	W. by W.	
8 1	W.S.W.	
	&c.	&c. &c.

The scene of Mr. Hamilton's operations in Asia Minor lies between the parallels 37° and 42° N., and between the meridians 27° and 44° E. of Greenwich. The extreme *termini* of his expeditions are, on the W., Smyrna to the N. and Ephesus to the S.; on the E., the Turkish frontier opposite to the Russian fortress Gümri (*circa* 44° E.) on the N., and Kaisariyeh (*circa* 35½° E.) on the S. Between these extreme points his southern route extends as far S. as Karaman (a little to the N. of 37° N.); and his northern route as far north as Sinope (*circa* 42° N.). From Niksar on the Yeshil-Irmak to Smyrna, and from Kaisariyeh to Ephesus Mr. Hamilton's two principal routes wind through the very heart of Asia Minor. The northern route is connected between the 28th and 29th meridians E. of Greenwich with the shores of the sea of Marmora by a very interesting side route. From Niksar (*circa* 37° E.) to Sinope (*circa* 35° E.) the northern route curves back upon itself in a N.W. direction towards the sea; it extends thence along the sea-coast to Trebizond,* whence it strikes inland to Gumishkaneh, and thence E. to Arzrum, Kars, and Gümri.

The Itinerary of which a fragment has been quoted above is warrant that Mr. Hamilton did not go over all this ground with listless or inattentive eye. Nor did he confine his observations to those of a mere flying survey. It appears from the account of his method of procedure, which has already been quoted, that he made a large collection of minerals, and the remarks on geology scattered through his work denote an intelligent geologist. The observations for latitude by Mr. Hamilton, that have been calculated by his brother, are sixty-one in number; and during his travels in Asia Minor he collected no less than 455 Greek inscriptions—some of them of considerable length and great importance. This brief recapitulation of the extent of ground gone over, and of the numerous and important observations collected in the course of the expedition, will suffice to show the rich harvest, both for positive and comparative geography, contained in Mr. Hamilton's volumes. His routes occasionally cross those of other travellers, but rarely coincide with them, and even when they do, only for very short distances. His field of operations connects the surveys of Captains Copeland and Graves, on the W., with those of the Russian officers, and the routes of Mr. Brant on the E. It is crossed by the routes of Mr. Ainsworth, which connect it with the operations of Colonel Chesney's expedition on the Euphrates. We have only to regret, and where so much has been accomplished by one unaided individual the omission is as nothing to what has been done, that Mr. Hamilton, when at Karaman, did not make a side excursion to the S. coast of Asia Minor, and thereby connect his routes with Captain Beaufort's marine survey.

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* This is reversing the direction in which Mr. H. travelled; but our object at present is merely to indicate the extent and relative position of the ground gone over.

The limited range—the almost topographical character—of Professor Forbes's corrections of Alpine geography enabled us to enter upon them with a degree of detail, which, with a work grasping so extensive a field as Mr. Hamilton's, is clearly impossible. To indicate his corrections of the geography, positive and comparative, of Asia Minor would require a volume. Indeed, considering how much has been done by Messrs. Hamilton, Ainsworth, Arundel, the British officers engaged in the coast-survey of Asia Minor, Mr. Brant and others, and by the alterations which have taken place in the provincial arrangements of the Turkish empire, since the publication of Colonel Leake's work, which first gave form and system to the geography of this peninsula, it is much to be desired that some one would undertake the task. Should Colonel Leake feel disposed to undertake it, the domain is in a manner his own; he has the best right. But should he decline, there appears to be no one so well fitted for the task, by opportunities of personal observation and by collateral knowledge, as Mr. Hamilton himself. Mr. Arrowsmith's map, which accompanies this work, and of which Mr. Hamilton speaks in such high terms—and they are not higher than it deserves—might form the groundwork of such a memoir. Mr. Arrowsmith has judiciously left blank in this map all the spaces not visited by Mr. Hamilton, or the authorities he has enumerated. But, even during the short time that has elapsed since the publication of the map, valuable materials have accumulated for rendering it more complete:—the surveys of the Prussian officers serving with the Turkish army, and the protracted routes of private travellers. Mr. Arrowsmith will soon have it in his power to render this map much more complete; and its value would, in that case, be greatly enhanced by a memoir containing a systematic view of the physical and political geography of Asia Minor—all its existing divisions and subdivisions, with the native names; and, added to this, a view of its comparative geography, in which all the additions made to our knowledge since the publication of Colonel Leake's work should be turned to account.

The sentiment most forcibly impressed upon us by the perusal of Mr. Hamilton's researches is our utter ignorance of the ancient history of the region through which he is travelling. The artistical perfection of the classical writers leads us to over-estimate the amount of positive information they contain. In reading Homer, Herodotus, Xenophon, Cicero, and even Strabo, Arrian, and Quintus Curtius, the mind is so occupied that we forget that they merely skirt the coast, or hurry by beaten tracks across the country, throwing out few hints of its appearance or history. The notices of Asia Minor that may be gleaned from the fathers, or from the contemporary profane writers, are scarcely more rich. But it is only when we are conducted by an intelligent traveller, like Mr. Hamilton, through the valleys and ravines which channel its huge plateau, that the meagre character of their information strikes us. A citation may serve to make our meaning more clear: the remains described are in the S.W. corner of the drainage basin of the Yeshil Irmak.

> " While meditating on my disappointment, and on the probable origin of the ruins around me, Hafiz Agha reported that he had learned from some peasants that, in the neighbouring village of Euyuk, about two miles off to the S.S.W. there were some curious old stones, in search of which I immediately started. On arriving there I found a Turcoman village, on the southern limits of which was a very curious monument of the oldest times. When I first saw the numerous rude and apparently shapeless stones, forming a kind of avenue, they reminded me of Druidical remains, and I thought they might have belonged to the Gallo-Græci; but, on further examination, they proved to be of a different character. The ruins consist of a large gateway or entrance, facing the south, with part of a massive wall on each side; the two principal stones which form the posts are of gigantic size, being 10 or 12 feet high. On the outside of each is sculptured a monstrous figure with a human head, in a very Egyptian style, the body being a grotesque imitation of a bird, the legs of which terminate in lions' claws. The wall, which advances about 14 feet on each side of the gateway and then breaks off to the right and left, leaving a paved inclosed space in front of the entrance, has consisted of enormous blocks of Cyclopean character, but is now much ruined; yet, on the lower course of stones, which are above 3 feet high, several figures, nearly of the same height, are rudely sculptured in very flat relief. The first stone, towards the west, represents children playing upon instruments, but too faint to be distinguished; the second represents three priests clothed in long robes; the third rams driven to the sacrifice; and the last a bull, very rudely sculptured. Within the gateway an avenue of large stones leads some distance into the village. A curious feature of this monument is, that on the

inside of one of the high door-posts a double-headed eagle has been sculptured, which, however, may have been a modern addition. In front of one of the cottages in the village was a large square stone, with an inscription in very curious characters.—Are they Phœnician or Phrygian, Greek or Celtic? These remains acquire additional interest from the curious carvings which Texier discovered on the rocks near Boghazkieui, only five hours from the village."

The literature of antiquity may be searched in vain for the history of these and other equally mysterious remains upon which recent travellers in Asia Minor have stumbled in valleys and ravines. The history and geography of ancient Asia Minor, both of which are necessary to the perfect understanding of either, have yet to be composed. Materials—scanty enough, and which have yet to be assorted and subjected to a searching *critique*—do exist in the inscriptions to which Mr. Hamilton has added so many, and in the legal compilations of Justinian and the other emperors. These, if properly studied, by the lights thrown on them from ancient history and ancient itineraries, and which they reflect back upon these sources, might be found to yield more valuable results than will readily be believed by those who are not aware how much has been accomplished within the last quarter of a century by an analogous process for the ancient constitutional and legal history of Rome. The ecclesiastical historians and Greek fathers may also be studied with advantage to this end. But they must be *studied.* Not much is to be done for comparative geography by the *dilettante* fashion in which it is too generally pursued. A respectable and intelligent traveller who has passed through regions rarely visited in which some remarkable historical incidents are believed to have occurred, sets himself, on his return, to read up, with a view to fix the exact locality of these events. In proportion to his want of acquaintance with such inquiries is the confidence with which he maintains his conclusions. If he is ignorant of the original languages he is sure to be particularly elaborate in his learning. He asks no credit for a simple and truthful description of what he has seen or measured; for that nothing is wanted but the exercise of faculties which he, a shrewd and veracious man, employs every day. But learning is something so unfamiliar to him—has such a gloss of novelty about it—that he becomes enamoured of himself in his new dress. He thinks nothing of what he might really earn credit by—seeing and describing accurately,—and he prides himself upon a worthless parade of what he thinks is learning. To be rendered available for the purposes of comparative geography the ancient authors must have been studied thoroughly before-hand and for themselves. If a man only turns to an isolated passage for the purpose of bolstering up a preconceived theory, he may almost be certain that he will misunderstand it.

In enumerating the ecclesiastical writers among those who may be consulted with advantage, for the ancient history and comparative geography of Asia Minor, it is not meant to be implied that the monument, the description of which suggested this digression, was contemporary with them. At the same time, we are not inclined to believe that it, or others of a kindred character in Asia Minor, are necessarily of a very remote era. Many of the rock carvings of Persia were contemporaneous with the Roman empire. The military operations and colonies of that state transplanted superstitions from their native soil to the most remote regions. Isis had temples reared at Rome, and Mithra was sculptured on the rocks of Gaul. The allegorical paganism of the Alexandrian school, and the wild heresies of some of the Gnostic sects, favoured the amalgamation of the most heterogeneous god-notions and forms of worship. The Confessions of St. Augustine show that, even so late as his time, the popular mind was in many places essentially pagan. This was an age of very low artistical taste and talent; and lubberly shapelessness is as much, if not more, a characteristic of retrograding than of infant art. The figures described in the passage quoted above, in so far as we can judge of them from the accompanying drawing, appear to us to have more analogy to the figures on the gnostic medals or talismans than to the early sculptures of Egypt. Nor are the Cyclopean blocks stumbling-blocks in the way of this conjecture: the huge stones of Balbek were quarried under the Roman emperors. This, however, is a mere conjectural hint, thrown out to suggest examination in a certain quarter. As suggestive of inquiry all conjectures are valuable; for any thing beyond this the most plausible conjectures have no value at all.

III.—*The National Atlas of Historical, Commercial, and Political Geography, constructed from the most recent and authentic sources.* By ALEXANDER KEITH JOHNSTON, F. R. G. S., Geographer (at Edinburgh) in Ordinary to Her Majesty. Accompanied by Maps and Illustrations of the Physical Geography of the Globe, by Dr. Heinrich Berghaus, Professor of Geography, Berlin; and an Ethnographic Map of Europe, by Dr. Gustaf Kombst; Edinburgh, 1843. [By the Editor.]

THE feature of this new atlas which first arrested our attention was the physical geography of Professor Berghaus. This part of the work consists of that distinguished geographer's map-illustrations of Humboldt's system of isothermal curves, of the geographical distributions of the currents of air, of a survey of the culture of plants, and of the mountain-chains of Europe and